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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/597,153	07/13/2006	Noriaki Saito	40601	6842
53054 7590 03/31/2009 PEARNE & GORDON LLP 1801 EAST 9TH STREET SUITE 1200 CLEVELAND, OH 44114-3108				
EXAMINER				
TSE, YOUNG TOI				
ART UNIT		PAPER NUMBER		
2611				
NOTIFICATION DATE		DELIVERY MODE		
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary

Application No.

10/597,153

Applicant(s)

SAITO ET AL.

Examiner

YOUNG T. TSE

Art Unit

2611

Period for Reply -- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 13 July 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-11 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-4, 6-8, 10 and 11 is/are rejected.
- 7) ☒ Claim(s) 5 and 9 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 13 July 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☒ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SF-08)
Paper No(s)/Mail Date 20060713; 20080918
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Priority

1. Acknowledgment is made of applicant's claim for foreign priority based on an application filed in Japan on 01/27/2004 and an application filed in Japan on 12/06/2004. It is noted, however, that applicant has not filed a certified copy of the 2004-017955 and 2004-352464 applications as required by 35 U.S.C. 119(b).

Information Disclosure Statement

2. The information disclosure statement filed on July 13, 2006 fails to comply with 37 CFR 1.98(a)(2), which requires a legible copy of each cited foreign patent document; each non-patent literature publication or that portion which caused it to be listed; and all other information or that portion which caused it to be listed. It has been placed in the application file, but the information referred to therein has not been considered.

Specification

3. Applicant is reminded of the proper language and format for an abstract of the disclosure.

The abstract should be in narrative form and generally limited to a single paragraph on a separate sheet within the range of 50 to 150 words. It is important that the abstract not exceed 150 words in length since the space provided for the abstract on the computer tape used by the printer is limited. The form and legal phraseology often used in patent claims, such as "means" and "said," should be avoided. The abstract should describe the disclosure sufficiently to assist readers in deciding whether there is a need for consulting the full patent text for details.

The language should be clear and concise and should not repeat information given in the title. It should avoid using phrases which can be implied, such as, "The disclosure concerns," "The disclosure defined by this invention," "The disclosure describes," etc.

Applicants had filed two separated abstracts, one filed on July 13, 2006 and another one filed on September 18, 2007, the contents in each abstract is different from each other. Clarification is requested and a new abstract may be required. Further, the abstract filed on July 13, 2006 is not limited to a single paragraph on a separate sheet within the range of 50 to 150 words.

4. The disclosure is objected to because of the following informalities: paragraph [0041], line 12, "equal to larger than" should be "equal to or larger than". Appropriate correction is required.
5. The lengthy specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

Claim Objections

6. Claims 1-11 are objected to because of the following informalities:

Claim 1, line 5, "performing" should be "performs"; lines 8 and 12, "output" should be "an output"; line 9, "a gain" is suggested change to "a predetermined gain"; and line 20, "if transmission output power" is suggested change to "if transmission output power of the power amplifying unit" to clarify it is not used for the variable gain amplification unit.

Claim 2, lines 3-4, "the maximum output level or the proximity" should be "a maximum output level or proximity".

Claim 5 (line 12), claim 6 (line 10), and claim 10 (line 7), "polar coordinate" should be "the polar coordinate" for clarity.

Claim 10, line 4, "output" should be "an output".

Claim 11, line 2, "a transmitter" should be "the transmitter" for clarity.

Claims 3-4 and 7-9 are objected to because they are either directly or indirectly depended on the objected independent claim 1.

Appropriate correction is required.

Claim Rejections - 35 USC § 102

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) and the Intellectual Property and High Technology Technical Amendments Act of 2002 do not apply when the reference is a U.S. patent resulting directly or indirectly from an international application filed before November 29, 2000. Therefore, the prior art date of the reference is determined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

8. Claims 1-3, 7-8 and 11 are rejected under 35 U.S.C. 102(e) as being anticipated by Hara et al. (US 2006/0046666, hereinafter "Hara").

Hara discloses different transmitter embodiments, for example, shown in Figures 1 and 8, where linear operating mode or saturation operation mode is set as the operation mode of a high-frequency power amplifier (15) on the basis of an operating mode set signal (107). A gain of a variable gain amplifier (14) provided in front of the high-frequency power gain amplifier (15) and values of output voltage (109) and bias current supplied from a supply voltage/bias current control circuit (17) to the high-frequency power amplifier (15) are switched. The gain of the variable gain amplifier (14) in the saturation operation mode is formed so as to be higher by a predetermined value than that in the high-frequency power amplifier (15) operates in the designated operation mode, so that the output transmission power range can be widened (abstract). Also see paragraphs [0012], [0013], [0016] - [0019], [0021] - [0031], [0033], [0036], [0038], [0039], [0052], [0055], [0059], [0062], [0063], [0070], [0074] - [0080], [0082] - [0091], and [0093] - [0095].

Regarding claim 1, the transmitter shown in either Figure 1 or Figure 8 comprising: a quadrature phase modulation means (12 or 32) which inputs an in-phase component and a quadrature component of an input modulation signal (101) and performs quadrature modulation; a variable gain amplifier (13 or 14) which amplifies an output of the quadrature modulation unit with a gain being controlled based on a gain control signal (106, 107, 108); and a high-frequency power amplifier (15) which performs power amplification of an output of the variable gain amplifier. Wherein the

high-frequency power amplifier has a linear mode for performing power amplification using a linear operation region in an input/output power characteristic (see Figure 5) and a saturation mode for performing power amplification using a saturation operation region in the input/output power characteristic, and wherein, if transmission output power of the high-frequency power amplifier is equal to or greater than a predetermined value, the output level of the variable gain amplifier is adjusted, the high-frequency power amplifier is operated in the saturation mode, and a transmission output control signal amplitude-modulated based on an amplitude component of the input modulation signal is input to an output control input terminal of the high-frequency power amplifier for performing polar coordinate modulation; if the transmission output power is less than the predetermined value, the output level of the variable gain amplifier is adjusted, the power is operated in the linear mode, and a transmission output control signal of a predetermined level responsive to the transmission output power is input to the output control input terminal for performing linear amplification.

Regarding claim 2, wherein, if the transmission output power is at a maximum output level or in proximity thereof, the high-frequency power amplifier performs the polar coordinate modulation and if the transmission output power is smaller than the maximum output level or the proximity thereof, the power unit performs the linear amplification. Also see paragraphs [0082] and [0087].

Regarding claim 3, wherein the high-frequency power amplifier comprises a power supply terminal (109) used as the output control input terminal, and wherein the transmitter further comprises a power supply driver (17) for increasing the current

capacity of the signal of the predetermined level or the signal amplitude-modulated based on the amplitude component of the input modulation signal and supplying power to the power supply terminal as the transmission output control signal.

Regarding claim 7, inherently, the supply voltage/bias current control circuit (17) comprises a liner regulator because the high-frequency power amplifier (15) is operated in either linear operation mode or saturation operation mode.

Regarding claim 8, inherently, the supply voltage/bias current control circuit (17) comprises a switching regulator in order to control the voltage and/or bias current to the high-frequency power amplifier (15).

Regarding claim 11, Hara teaches that the transmitter used in either Figure 1 or Figure 8 can be applied to a radio communication apparatus such as a portable wireless terminal apparatus or a radio base station (paragraph [0110]).

Claim Rejections - 35 USC § 103

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

10. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation

under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

11. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hara.

As described in paragraph 8 above, although Hara does not explicitly show, teach, or suggest that a power supply terminal provided by the supply voltage/bias current control circuit (17) provides a fixed power supply as the control signal to control the high-frequency power amplifier (15). It is obvious to an average skilled artisan would recognize that any power supply device, such as the supply voltage/bias current control circuit (17) is capable of supplying either a variable voltage or a fixed voltage to provide a control voltage to a power amplifier, such as the high-frequency power amplifier (15).

12. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hara in view of Mattila et al (US 5,432,473, hereinafter "Mattila").

Regarding claim 6, although Hara does not show the detailed block diagram of the supply voltage/bias current control circuit (17) that comprises an operational amplifier for waveform shaping, and wherein the operational amplifier can change an operation current and has an operation current switch function for increasing the operation current as compared with that when the linear amplification is performed only when polar coordinate modulation is performed in the high-frequency power amplifier.

Mattila discloses a transmitter in Figure 1 comprising similar block element to Hara's transmitter, such as variable gain amplifier (1, 2), power amplifier (3), and bias control circuit (7) for controlling the voltages of the driver amplifier (2) and the power amplifier (3).

Figure 2 shows the detailed block diagram of the bias control circuit (7) of Figure 1 which clearly comprises an operational amplifier (N21) changes an operation current and has an operation current switch function for increasing the operation current as compared with the performance of the power amplifier (3). See col. 4, lines 23-66.

Therefore, it would have been obvious to one of ordinary skill in the art that a voltage/bias current control circuit, such as Hara's supply voltage/bias current control circuit (17), comprising an operational amplifier as taught by Mattila which is capable of changing an operation current and has an operation current switch function for increasing the operation current as compared with that when the linear amplification is performed only when polar coordinate modulation is performed in the high-frequency power amplifier (15).

13. Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hara in view of Bengtsson et al. (US 2002/0071497, hereinafter "Bengtsson").

Regarding claim 10, although Hara does not show a feedback section of a receiver circuit comprising a demodulation section for demodulating an output of the high-frequency power amplifier (15) and a control section for adjusting the timing of amplitude modulation when polar coordinate modulation is performed in the high-

frequency power amplifier based on information of a demodulation signal provided by the demodulation section.

Bengtsson discloses a transmitter circuit in different embodiments, such as the one shown in Figure 6, which comprises similar block elements, such as the quadrature modulation circuit (420), a gain control circuit (430') and the power amplifier (460). Figure 6 also comprises a feedback receiver circuit (440') including a demodulation circuit (533) for demodulating the output signal of the power amplifier (46)) and a control circuit (446, 442, 443) for controlling the gain of the power amplifier (460). Also see paragraphs [0032] and [0033].

Therefore, it would have been obvious to one of ordinary skill in the art as taught by Bengtsson to employ a feedback receiver circuit including a demodulation circuit and a control circuit in Hara's transmitter in order to control the gain of the high-frequency power amplifier (15) and to adjust the timing of amplitude modulation when polar coordinate modulation is performed in the high-frequency power amplifier based on information of a demodulation signal provided by the demodulation circuit.

Allowable Subject Matter

14. Claim 5 would be allowable if rewritten to overcome the objection(s) set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

15. Claim 9 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

16. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Zhang et al. relates to an RF transmitter which provides both GSM and EDGE capability by implementing controller voltage control over the power transmission in a power amplifier.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to YOUNG T. TSE whose telephone number is 571- 272-3051. The examiner can normally be reached on Monday-Friday 10:00-6:30 PM, EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mohammad H. Ghayour can be reached on 571- 272-3021. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/YOUNG T. TSE/
Primary Examiner, Art Unit 2611